DOS Compatibility Software Update

User's Manual

Apple Computer, Inc.

© 1996 Apple Computer, Inc. All rights reserved.

Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of Apple. Your rights to the software are governed by the accompanying software license agreement.

The Apple logo is a trademark of Apple Computer, Inc., registered in the U.S. and other countries. Use of the “keyboard” Apple logo (Option-Shift-K) for commercial purposes without the prior written consent of Apple may constitute trademark infringement and unfair competition in violation of federal and state laws.

Every effort has been made to ensure that the information in this manual is accurate. Apple is not responsible for printing or clerical errors.

Apple Computer, Inc.
1 Infinite Loop
Cupertino, CA 95014-2084
(408) 996-1010

Apple, the Apple logo, AppleShare, AppleTalk, EtherTalk, ImageWriter, LaserWriter, Mac, Macintosh, MacTCP, Performa, Power Macintosh, ProDOS, QuickTime, StyleWriter, and TrueType are trademarks of Apple Computer, Inc., registered in the U.S. and other countries.

AppleVision, AudioVision, and QuickDraw are trademarks of Apple Computer, Inc.

Adobe and PostScript are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions.

Helvetica and Times are registered trademarks of Linotype-Hell AG and/or its subsidiaries.

Simultaneously published in the United States and Canada.

Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Apple assumes no responsibility with regard to the performance or use of these products.

Contents

Preface vii

1 Installing the DOS Compatibility Software Update 1

Before you install 1

Creating installation disks from disk images 2

Installing the Macintosh DOS Compatibility software 3

Installing support software for DOS 4

Installing support software for Windows 5

Configuring network support in Windows 6

What's next? 6

2 Setting Up the PC Environment 7

Setting up your DOS configuration files 8

Editing the CONFIG.SYS file 8

Editing the AUTOEXEC.BAT file 9

About the PC Setup control panel 9

Setting printer options 11

Setting up printing in the Mac OS 11

Setting up printing in the PC environment 14

Configuring PC sound 17
Turning PC sound on and off 18
Configuring PC drives 19
Creating a drive container 19
Mapping a drive to a PC-formatted hard disk 20
Changing a drive assignment 20
Changing the size of a drive container 21
Using shared volumes 22
Sharing a volume 22
Unsharing a volume 23
Turning off automatic sharing 23
Setting up your PC on a network 23
Configuring the PC serial ports 24
Setting up a modem or other serial device 24
Building a custom cable 25

3 Working in the PC Environment 26

Switching between the Mac OS and PC environments 27
Switching environments with a keyboard command 28
Turning the PC on and off 28
Starting the PC automatically 29
Using floppy disk drives and floppy disks 30
Restarting the PC from a floppy disk 30
Using CD-ROM discs and drives 30
Using a mouse 31
Using keyboards 32
Copying and pasting information between environments 33
Using shared folders and volumes 34
Using PC files in the Mac OS 35

4 Troubleshooting in the PC Environment 37

Starting up 38

Switching to and from the PC 40

Display problems 41

Problems with files and disks 42

Problems with information transfer 43

Configuration problems 44

Sound problems 45

Printing problems 47

Other problems 49

Appendix Installing Network Client Software 50

Installing protocols for use with Open Data-Link Interface (ODI) 51

Installing NetWare client software 51

Installing NetBEUI and IPX/SPX in Windows 95 53

Installing TCP/IP in Windows 95 54

Installing NetBEUI in Windows for Workgroups 56

Installing IPX/SPX in Windows for Workgroups 57

Installing Microsoft's TCP/IP-32 IP Protocol Stack in Windows for Workgroups 60

Installing Trumpet WinSock in Windows for Workgroups 61

Installing Spry Air Series TCP/IP in Windows for Workgroups 63

Installing AppleShare for Windows in Windows for Workgroups 64

Installing Novell's LAN WorkPlace for DOS TCP/IP software 66

Installing protocols for use with Network Driver Interface Specification (NDIS) 2.0 67

Installing NetBEUI and IPX/SPX in Windows 95 67

Installing Microsoft TCP/IP-32 protocol stack in Windows 95 69

Installing NetBEUI and IPX/SPX in Windows for Workgroups 70

Installing Microsoft's TCP/IP in Windows for Workgroups 72

Using an OS/2 LAN Server with Windows for Workgroups 73
Installing client software for an OS/2 LAN server in DOS or Windows 74
Installing Banyan Vines in DOS 76
Installing NetManage Chameleon TCP/IP software in Windows for Workgroups 77
Using a dial-up service 78
Running the Network Protocol Setup (SETNET) utility 78

Preface

The DOS Compatibility Software Update is a set of software enhancements that improve the reliability and performance of the following:

- Power Macintosh 6100 DOS Compatible computer
- Macintosh Performa 6100 DOS Compatible computer
- Macintosh Performa 630 and 640CD DOS Compatible computers
- Macintosh LC 630 DOS Compatible computer

This update also works with any Power Macintosh 6100 or Macintosh Performa 6100 series computer that has a DOS Compatibility Card installed.

Note: If you are using a PC Compatibility Card with any Macintosh that has a PCI expansion slot, you do not need to install this update.

What the DOS Compatibility Software Update provides

- overall improvement in reliability and performance
- improved PostScript printing
- improved Epson printer emulation, including color printing
- support for the Microsoft Network Driver Interface Specification (NDIS) version 2.0 and additional network protocols
- easier configuration of the NET.CFG and PROTOCOL.INI files with the Network Protocol Setup utility (SETNET.EXE)
- enhanced support for external CD-ROM drives

Using this manual

This manual describes how to install the DOS Compatibility Software Update and how to work with the PC and Mac OS environments. You can use this manual as a supplement to the original printed manual that came with your DOS-compatible Macintosh computer or DOS Compatibility Card.

To install the Software Update, turn to Chapter 1, “Installing the DOS Compatibility Software Update.”

After installing the Software Update, you can refer to the additional chapters in the manual if necessary.

- To learn how to configure your software, turn to Chapter 2, “Setting Up the PC Environment.”
- To learn how to work with the PC and Mac OS environments, turn to Chapter 3, “Working in the PC Environment.”
- To solve problems that may occur while you’re using your PC-compatible Macintosh, turn to Chapter 4, “Troubleshooting in the PC Environment.”
- To set up the PC on a network, turn to the Appendix, “Installing Network Client Software.”

For information on installing your card or connecting equipment to your card or DOS-compatible computer, refer to the printed manual that came with your card or computer.

1 Installing the DOS Compatibility Software Update

This chapter covers how to install the DOS Compatibility Software Update.

For information on setting up the software after you install it, including additional changes you may need to make to the DOS AUTOEXEC.BAT and CONFIG.SYS files, see Chapter 2, “Setting Up the PC Environment.”

There are several steps to installing your DOS Compatibility Software Update:

- installing the Macintosh software
- installing support software for DOS
- installing support software for Windows (necessary only if you are using Windows)

Before you install

Before you install the DOS Compatibility Software Update, check the version of your system software by opening the Apple (🍎) menu and choosing About This Macintosh while the Finder is active. You can use either System 7.1.2 or System 7.5.3 with the DOS Compatibility Software Update.

If you are currently using System 7.5, you can install the System 7.5 Update 2.0 to update to System 7.5.3. You can order System 7.5 Update 2.0 on a CD or a high-density floppy disk set from the Apple Order Center by calling 1-800-293-6617.

Creating installation disks from disk images

Before you can install the DOS Compatibility Software Update, you need to use the Disk Copy program to create two installation disks from two disk image files. You will use these disks in the following sections to install the DOS Compatibility Software Update.

Follow the following steps to create the installation disks:

1. **Obtain two blank, high-density floppy disks.**
2. **Double-click the *APPLE_PC.image* disk image file to open it in the Disk Copy program.**



3. **Click the Make a Copy button, and insert one of your floppy disks.**

   The Disk Copy program will create a DOS disk named *APPLE_PC*, and eject the disk.

4. **Click the Quit button in the Disk Copy window.**
5. **Double-click the *PC Compatibility Software.image* disk image file to open it in the Disk Copy program.**



6. **Click the Make a Copy button, and insert the other floppy disk.**

   The Disk Copy program will create a Macintosh disk named *PC Compatibility Software* and eject the disk.

7. **Click the Quit button in the Disk Copy window.**

You have now created the disks you will need to install the DOS Compatibility Software Update.

Installing the Macintosh DOS Compatibility software

To install the Macintosh DOS Compatibility software, follow these steps:

1. **Insert the *PC Compatibility Software* disk into the disk drive.**
2. **Double-click the Installer icon.**

   A message may appear describing the Installer software. Click OK.

   The Installer window appears.
3. **Make sure the disk named in the box is the one on which you want to install software.**

   If not, click Switch Disk until the correct disk name appears.

   Note: If you want to install only specific components, choose Custom Install from the Easy Install menu. In the Custom Install window, click to place an X in the boxes next to the components you want to install. Click the information symbol for more information about a component.
4. **Click Install.**

   The software is automatically installed onto your hard disk.
5. **When the installation is complete, follow the instructions on the screen to quit the Installer and restart your Macintosh.**

   The following Mac OS software is now installed:

Name	Location
Macintosh Easy Open	Control Panels folder
PC Exchange	Control Panels folder
PC Setup	Control Panels folder
Apple CD-ROM	Extensions folder
Ethernet (built-in)	Extensions folder
PC Compatibility Guide	Extensions folder
PC Clipboard	Extensions folder
PC Clipboard Translators	Extensions folder
PC Net Exchange	Extensions folder
PC Network Extension	Extensions folder
PC Print Spooler	Extensions folder

Installing support software for DOS

Installing the software on the *APPLE_PC* floppy disk updates the DOS Compatibility software in the PC environment. If you are using Windows, follow the steps in the next section, "Installing Support Software for Windows."

To install the software, follow these steps:

1. **In the PC environment, insert the *APPLE_PC* floppy disk.**

   To switch to the PC environment from the Mac OS, press ⌘-Return, or open the PC Setup control panel and click Switch to PC.

2. **Type `A:\SETUP`; then press Return.**

3. **You may see a message asking if you want to install support for DOS or Windows. Press D for DOS.**

4. **You're asked to choose a drive for the files. Choose the C drive.**

5. **You're asked to choose a directory. It's best to accept the suggested directory, C:\APPLE.**

6. **Choose Yes to continue installation. If you're asked whether you want to overwrite files, choose Yes.**

7. **You're asked whether you want the program to modify your system files. Choose "Apply changes directly to system files."**

   If you choose to apply the changes to copies of the system files, the copies are called filename.number.

8. **When installation is complete, restart the PC by switching to the Mac OS (by pressing ⌘-Return), opening the PC Setup control panel, and clicking Restart PC.**

   You can also restart the PC by pressing the Control-Alt-⌦ keys. (For more information on restarting the PC, see "Switching Between the Mac OS and PC Environments" in Chapter 3.)

Installing support software for Windows

Installing the software on the *APPLE_PC* floppy disk updates the DOS Compatibility software in the PC environment. If you are using DOS, follow the steps in the previous section, "Installing Support Software for DOS."

To install the software, follow these steps:

1. **If necessary, switch to the PC environment.**

   To switch to the PC environment from the Mac OS, press ⌘-Return, or open the PC Setup control panel and click Switch to PC.

2. **Insert the *APPLE_PC* floppy disk.**

3. **In Windows, choose Run from the File menu. In Windows 95, click Start; then choose Run from the menu that appears.**

4. **Type `A:\SETUP`; then press Return.**

5. **Follow the instructions that appear on the screen.**

   The recommended directory to install files is C:\APPLE. To change this location, click Set Location.

   By default, all options will be installed. You may choose not to install specific options. The installation options are:

   - Install Macintosh/Windows Copy and Paste: allows you to transfer Clipboard information between the Macintosh and PC environments.
   - Install Macintosh/PC Folder Sharing: allows you to share a Macintosh folder as a shared drive.
   - Install CD-ROM Support: allows you to use the CD-ROM discs in the PC environment.

6. **When installation is complete, shut down Windows or Windows 95.**

   To shut down Windows, choose Exit Windows from the File menu in the Program Manager. To shut down Windows 95, click the Start button and choose Shut Down from the menu that appears.

7 **Press ⌘-Return to switch to the Mac OS environment.**

8 **Open the PC Setup control panel and click Restart PC.**

IMPORTANT If you are using Windows 95, refer to "Sound Problems" in Chapter 4, "Troubleshooting in the PC Environment." This section contains important information about configuring Sound Blaster so that it works properly with Windows 95.

Configuring network support in Windows

To configure network support in Windows, see the Appendix, "Installing Network Client Software."

What's next?

You've finished installing your PC software. Turn now to Chapter 2, "Setting Up the PC Environment," to learn how to configure your PC software.

2 Setting Up the PC Environment

This chapter contains information on the following aspects of your PC environment:

- DOS configuration files
- the PC Setup control panel
- printer settings
- sound options
- PC drives
- shared volumes
- network settings
- serial port settings
- modem settings

Setting up your DOS configuration files

You may need to modify your DOS CONFIG.SYS file to work efficiently. Follow these guidelines:

Editing the CONFIG.SYS file

Your CONFIG.SYS should include the following statements:

```
DOS=HIGH,UMB
INSTALLHIGH C:\APPLE\MACSHARE.COM
DEVICE=C:\DOS\HIMEM.SYS /TESTMEM:OFF
DEVICE=C:\DOS\EMM386.EXE NOEMS I=CA00-CBFF X=CC00-CFFF
RAM=D000-EFFF
```

The first two lines load DOS and file-sharing software into high memory.

If you're using the DOS utility EMM386 and you don't require expanded memory, use the EMM386 line shown above. If you are using EMM386 and you do require expanded memory, include the following line instead:

```
DEVICE=C:\DOS\EMM386.EXE I=CA00-CBFF X=CC00-CFFF
RAM=D000-EFFF
```

For more information on making the best use of memory, see the information on memory management in the documentation for DOS or for your memory manager.

Setting the number of drive letters

You can share folders and volumes with the PC by assigning them to PC drive letters. When you install your PC software, the statement `LASTDRIVE=M` is included in the CONFIG.SYS file. This allows you to view up to nine folders or volumes at once.

To specify the number of drive letters, change your CONFIG.SYS file to include the following statement:

```
LASTDRIVE=x
```

where *x* is a letter between F and Z. (The PC reserves drive letters A through E.)

Each drive letter uses 100 bytes of PC memory.

Editing the AUTOEXEC.BAT file

Your AUTOEXEC.BAT file should include the following statements:

```
SET TEMP=C:\TMP
SET TMP=C:\TMP
PATH=C:\DOS
LOADHIGH C:\DOS\MSCDEX.EXE /S /D:CDDRVR /L:E
LOADHIGH C:\APPLE\APPLEPC
C:\DOS\SMARTDRV.EXE /X
```

The first two lines determine the location for temporary files used by DOS applications.

The LOADHIGH lines load support and CD-ROM software into high memory. The letter “E” at the end of the MSCDEX.EXE line assigns the letter “E” to the CD-ROM drive. You can change it to any unused letter up to the limit specified in the LASTDRIVE line in your CONFIG.SYS file.

The SMARTDRV line creates a disk cache to speed up DOS disk operations. The /X option disables the write cache, which is the slower but safer option. For best CD-ROM performance, the line containing MSCDEX.EXE must come before the line containing SMARTDRV.EXE.

About the PC Setup control panel

You can control the following PC options in the PC Setup control panel:

- turning the control panel on and off
- mapping drives to drive containers or volumes
- mapping PC COM1 and COM2 ports
- setting up shared folders and volumes
- turning PC sound on and off
- changing the command (hot key) that switches between environments
- setting the PC to start automatically when you start your computer
- switching to the PC automatically when you start your computer

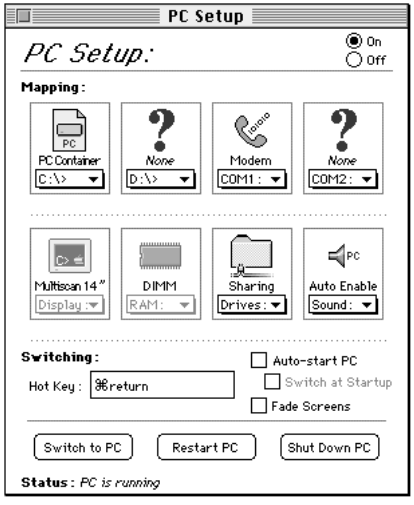
- setting the fade screen option when switching environments
- switching to, starting, and shutting down the PC

These options are described in this chapter and in Chapter 3, “Working in the PC Environment.”

To use the PC Setup control panel, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu.**

2 **Double-click the PC Setup control panel to open it.**



3 **When you have specified the settings you want, close the control panel.**

On-screen help: To see brief explanations of items in the control panel, choose Show Balloons from the Guide (?) menu. For detailed step-by-step help, see the PC Compatibility Guide, available in the Guide (?) menu.

Setting printer options

From the PC environment, you can print with most printers connected to the Macintosh, using the PC Print Spooler software.

The PowerPrint package by GDT Softworks, Inc., lets you use a PC-compatible parallel-port printer with your Macintosh. For more information, you can phone GDT at (800) 663-6222 or (604) 473-3600 or visit their World Wide Web site at http://www.gdt.com.

Setting up printing in the Mac OS

To print from the PC environment to a printer connected to the Macintosh, you need to select a printer in the Mac OS Chooser and set up the PC Print Spooler software. Follow these steps, then go to "Setting Up Printing in the PC Environment," later in this section.

1 **In the Mac OS environment, open the Chooser (in the Apple [] menu) and make sure a printer is selected.**

If you are using a PostScript™ printer, be sure to select the LaserWriter 8 driver. For more information on selecting a printer, see the documentation or on-screen help that came with your computer.

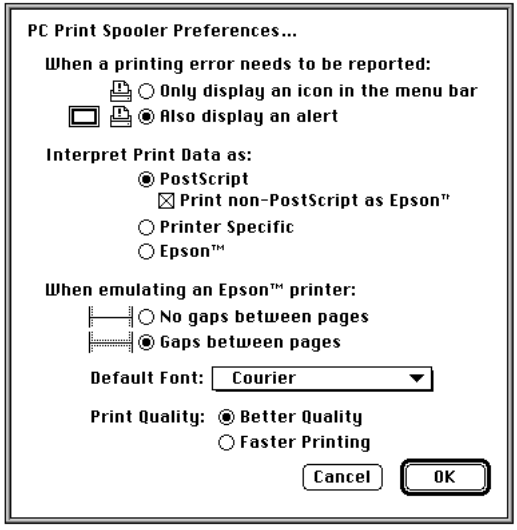
2 **Open the Extensions folder inside the System Folder.**

3 **Open the PC Print Spooler icon.**



PC Print Spooler

4 **Choose Preferences from the File menu.**



5 **Choose your preference for printing error notification.**

6 **Choose an option under "Interpret Print Data as."**

- Choose PostScript if your printer supports PostScript. If you plan to print non-PostScript files on a PostScript printer (such as printing files from the DOS prompt), make sure the checkbox labeled "Print non-PostScript as Epson" has an X in it.
- Choose Printer Specific if you have selected in the Chooser a printer whose driver can read PC printer information directly from the PC environment. For a list of printer drivers that support this feature, see the Read Me file that came with your DOS Compatibility Software Update.

  If the printer driver selected in the Chooser does not support this feature, you cannot choose this option.
- Choose Epson if you are using a QuickDraw printer (such as the StyleWriter or a LaserWriter that does not support PostScript).

  For more information about the Epson options, see the next section, "Epson Emulation Options."

7 **Click OK.**

Epson emulation options

If you chose Epson in the Print Spooler Preferences dialog box, you can make the following settings:

- Choose "Gaps between pages" if your applications are configured to print to a 60-line page. If your pages are clipped at the top or bottom when you print, select "No gaps between pages."
- The font in the Default Font box is used when you're printing ASCII text from DOS and when the Faster Printing option is selected. For best results, use a fixed-space font such as Courier or Monaco. Using a proportional font, such as Times®, may change your document's formatting.
- Choose Faster Printing when you want to quickly print text from a DOS application. When this option is selected, printers that use less than 300-dpi resolution (such as ImageWriter dot-matrix printers) will print in 72-dpi resolution.
- Choose Better Quality if you want Epson printer fonts in your document to be translated to corresponding Macintosh TrueType fonts. Because Epson printer fonts are fixed-space fonts, the TrueType font will be scaled to behave like a fixed-space font. Printers that use less than 300 dpi resolution will print in 144-dpi resolution.

For best results, use Epson printer fonts that map to a fixed-space TrueType font, or use graphical fonts supplied by your DOS application. The following table lists some Epson printer fonts and the TrueType fonts they are translated to if Better Quality is selected:

Epson font	TrueType font
Roman	Times (proportional)
SanSerif	Helvetica (proportional)
Prestige	Palatino (proportional)
Courier	Courier (fixed)
OCR-A, OCR-B	Monaco (fixed)
Script, Script C,	Monaco (fixed)
Orator, Orator S	Monaco (fixed)

Note: If you select Epson in the Preferences dialog box for PC Print Spooler, you can print only to the default paper size in the Mac OS Page Setup dialog box (US Letter in the U.S.). Make sure to configure your PC printing options appropriately.

Printing problems

If there is a printing problem, the file you're trying to print will be moved to the Spooler Rejected folder (in the Preferences Folder inside the System Folder). This might happen if, for example, you try to print a PostScript file with Epson selected in the PC Print Spooler Preferences.

After setting your preferences correctly, you can print the file automatically by moving the PC Spooler file from the Spooler Rejected folder to the Spooler folder. Or you can try switching to the PC environment and printing again.

Setting up printing in the PC environment

This section includes basic information you'll need to know to set up your printer drivers in the PC environment. For more detailed information, refer to the documentation that came with your software and printer.

IMPORTANT Some printer models support more than one printer language and may provide separate printer drivers for each language. If you are using the PostScript printing option, be sure to choose the printer driver that supports PostScript; otherwise, printing may not work properly.

Printing in the DOS environment

To print from the DOS environment, you need to select a printer driver for each application from which you want to print.

If you're using the PostScript printing option, choose the PostScript version of the printer driver for the printer connected to the Macintosh. If a driver is not available for that printer, you can use any PostScript Level 1 printer driver, such as Apple LaserWriter II NTX.

If you are using the Printer Specific feature, make sure to select a driver that works with the printer selected in the Chooser in each application from which you want to print.

If you are using the Epson emulation option, select the Epson LQ 2500 driver in each application from which you want to print. If that driver is not available, try one of the following:

- Epson LQ-2550/LQ-1050/LQ-1010
- Epson Action Printer 4500/ActionPrinter 4000

For best results, use a fixed-space font such as Courier or use your application's graphical fonts in your documents. See "Epson Emulation Options," earlier in this section.

Printing from Windows or Windows for Workgroups

If you're using the PostScript printing option, you should install and select the PostScript version of the Windows driver that came with your printer. If you don't have a Windows driver specifically for your printer, you can select another PostScript printer driver, such as one of the following:

- Apple LaserWriter II NTX if you have a PostScript Level 1 printer
- LaserWriter Pro 630 if you have a PostScript Level 2 printer

If you are not sure whether you have a PostScript Level 1 or Level 2 printer, choose a PostScript Level 1 printer driver. If you select a driver for a PostScript Level 1 printer, you can print to any PostScript printer. If you select a driver for a PostScript Level 2 printer, you can print only to printers that support PostScript Level 2.

If you are using the Printer Specific feature, make sure to select the driver for the printer selected in the Chooser.

If you are using the Epson emulation option, select the Epson LQ 2500 driver. If that driver is not available, try one of the following:

- Epson LQ-2550/LQ-1050/LQ-1010
- Epson Action Printer 4500/ActionPrinter 4000

Printing from Windows 95

Before you print from Windows 95 for the first time and any time you change printer drivers, you must follow these steps:

1. **In Windows 95, open the Printers folder.**

   If no printers are installed, see your Windows 95 documentation for instructions on how to add a printer.

2. **Select the printer that you are printing to.**

3. **Choose Properties from the File menu.**

   A window appears.

4. **Click Details.**

   The Details page appears.

5. **Click the Spool Settings button.**

   A dialog box appears.

6. **Click the button labeled "Disable bi-directional support for this printer." Then click OK.**

   If this button is not available, click OK; then go on to the next step.

7. **In the Properties window, click Port Settings.**

   The Configure LPT Port window appears.

8. **Make sure the checkbox labeled "Check port state before printing" is unchecked. Then click OK.**

After selecting or changing to a PostScript printer driver, you must also follow these steps:

9 **In the Properties window, click PostScript.**

10 **Click Advanced.**

A dialog box appears.

11 **Make sure the checkboxes labeled "Send CTRL+D before Job" and "Send CTRL+D after Job" are unchecked. Then click OK.**

12 **Close the Properties window.**

Other than these settings, setting up printing from Windows 95 is the same as printing from Windows. See the previous section, "Printing From Windows or Windows for Workgroups."

Configuring PC sound

You can use three kinds of sound in the PC environment:

- **PC beep sounds**
- **CD sound:** You can play and control audio CDs in the PC environment.
- **Sound Blaster sound:** You can hear Sound Blaster sound in games and other programs, and you can use Sound Blaster–compatible utilities to manipulate sound files. For more information about Sound Blaster capabilities, see the Sound Blaster manual that came with your DOS-compatible card or computer. (Some models do not include Sound Blaster capability.)

You can hear sound from the PC environment through the Macintosh speaker or through headphones.

The Mac OS treats all PC sound as if it were coming from the internal CD-ROM drive. You can still use the internal CD-ROM drive to play CDs and CD-ROM discs in the Mac OS.

Turning PC sound on and off

To hear PC sound, you need to turn on sound for the PC and set the sound input device in the Mac OS. Follow these steps:

Note: Before you begin, make sure that sound is turned on (not muted) in the Mac OS.

1. **Open the PC Setup control panel.**
2. **Choose an option from the Sound pop-up menu.**

You can choose the following options:

- To hear PC sounds in both environments, choose Enabled.
- To hear PC sounds only in the PC environment, choose Auto Enable.
- To shut off PC sounds, choose Disabled.

3. **Close the PC Setup control panel.**

To configure the Mac OS to play PC sounds, follow these steps:

1. **Open the Sound control panel.**
2. **Choose Sound In from the pop-up menu in the Sound control panel.**
3. **Click Options.**

The Input Source dialog box appears.

3. **Choose Internal CD and click OK.**
4. **Close the control panel.**

If you have problems enabling PC sounds, refer to “Sound Problems” in Chapter 4, “Troubleshooting in the PC Environment.”

Configuring PC drives

To work in the PC environment, you need to tell the PC where PC software and files are stored. You do this by mapping PC drive letters to storage areas using the PC Setup control panel. You can map drive C or D to a PC-formatted SCSI hard drive attached to your Macintosh, or to a drive container—a file you create on a Macintosh hard drive that acts as a virtual PC drive. You can also use a drive container created by SoftPC or SoftWindows.

Note: A hard drive or drive container only boots when assigned to drive C.

Creating a drive container

To create a drive container for drive C or D, follow these steps:

1. **Open the PC Setup control panel.**
2. **Choose New Drive File from the C: or D: pop-up menu.**
3. **In the dialog box that appears, choose a location for the drive container.**
4. **Type a name and a size for the container.**

   The size you choose depends on the amount of space available on your hard disk and on the size of the files you want to store in the drive container.

5. **If you want to format the drive container with multiple partitions, click Initialize Drive File to remove the X from the box.**

   If you want the container to have a single partition, leave this box checked and PC Setup will initialize the container for you.

6. **Click Create.**
7. **To format the container with multiple partitions, switch to DOS and prepare the drive using the FDISK and FORMAT commands.**

   To make the container bootable, use the /S parameter of the FORMAT command. See the DOS HELP command for more information.

Mapping a drive to a PC-formatted hard disk

To map a drive to a PC-formatted hard disk connected to your Macintosh SCSI port or SCSI chain, you first assign the drive letter to the hard disk; then you make sure the hard disk driver is not being loaded by PC Exchange. Follow these steps:

1. **Open the PC Setup control panel.**
2. **Choose Drive Partition from the C: or D: pop-up menu.**
3. **In the dialog box that appears, locate the SCSI drive partition you want to assign.**
4. **Open the PC Exchange control panel.**
5. **Click the Options button.**
6. **Make sure the SCSI driver for the PC drive is not checked. Then click OK.**

To make the drive bootable, switch to DOS and use the FORMAT command with the /S parameter. See the DOS HELP command for more information.

Changing a drive assignment

To change the container or partition assigned to the C or D drive, follow these steps:

1. **Open the PC Setup control panel.**
2. **To assign a new drive container, choose Other Drive File from the C: or D: pop-up menu. To assign a PC-formatted hard disk (or partition), choose Drive Partition.**
3. **In the dialog box that appears, locate the container or partition you want to assign.**
4. **Make sure the item is not being used as a disk drive in the Mac OS environment.**

If you have a Mac OS utility that mounts PC drives or containers (makes them available to the Mac OS as disks), the item may appear as an icon on the Mac OS desktop. If so, drag the icon to the Trash to unmount it.

WARNING If you don't unmount the item, you will lose information if both the Macintosh and the PC write to the device at the same

5 **Click Restart PC.**

IMPORTANT If you intend to make your PC drive available to the Mac OS, do not use a PC compression program. The Mac OS cannot mount compressed drives.

Changing the size of a drive container

To change the size of a drive container, you create a new one, move files to it, and delete the original container. If you need more space, you can also create an additional drive container to supplement an existing one.

The following procedure assumes that drive C is assigned to the drive container you want to replace, and drive D is available to be assigned to the new drive container. If drive D is already assigned, you need to unassign it temporarily (choose None from the D: pop-up menu in the PC Setup control panel). This will not affect the files within the container.

To create a new, different size drive container, follow these steps:

1 **Create a new container for drive D.**

Follow the instructions in "Creating a Drive Container," earlier in this section.

Configure the new container with the new size that you want.

2 **Click Restart PC at the bottom of the PC Setup control panel.**

3 **If you wish to make the new drive container bootable, switch to the PC environment and type the following at the DOS prompt:** `FORMAT D: /S`

Answer Yes when DOS asks if you're sure.

4 **Move all the files from the old drive container to the new one.**

You can move the files in either the Mac OS or the PC environment.

5 **In the PC Setup control panel, choose None from the D: pop-up menu to unassign the drive container.**

6 **Choose Other Drive File from the C: pop-up menu. Locate and select the container you just created.**

Your new container is now assigned to drive C.

7 **Click Restart PC at the bottom of the PC Setup control panel.**

8 **Click Switch to PC.**

9 **At the DOS prompt, type `DIR`.**

You should see a directory of all the files you copied.

10 **Verify that your files have been copied correctly.**

11 **In the Mac OS, drag the original container to the Trash and choose Empty Trash from the Special menu.**

Using shared volumes

You can set up a Mac OS folder to act as a PC drive.

Sharing a folder is a convenient way to transfer files between the Mac OS and the PC environment. Sharing is also useful for network volumes that otherwise would not be readily available to the PC environment.

Note: DOS treats all shared volumes as if they were on a network. Some DOS commands, such as FORMAT, CHKDSK, UNDELETE, and SUBST, will not work on these shared volumes.

Sharing a volume

To set up a shared volume, follow these steps:

1 **If the PC is not already running, open the PC Setup control panel and click Start PC.**

2 **In the PC Setup control panel, open the Sharing pop-up menu and choose an available drive letter.**

If no drive letters appear, switch to the PC, open the CONFIG.SYS file, and make sure that both a LASTDRIVE statement appears and sufficient available drive letters are assigned. See “Setting Up Your DOS Configuration Files,” earlier in this chapter.

3 **In the dialog box that appears, select a folder or network volume you want to share.**

Do not attempt to share floppy disks, CD-ROM discs, or hard disks.

4 **To automatically share this item whenever you start up the PC, click Attach at Startup.**

Automatically shared items are underlined in the Sharing pop-up menu.

For more information on transferring files between the PC environment and the Mac OS, see "Using Floppy Disk Drives and Floppy Disks," "Copying and Pasting Information Between Environments," and "Using Shared Folders and Volumes" in Chapter 3. Also see the PC Compatibility Guide, available in the Guide (?) menu.

Unsharing a volume

If you no longer want to share a volume, follow these steps:

1 **In the Mac OS environment, open the PC Setup control panel.**

2 **Open the Sharing pop-up menu and choose the name of the volume you want to unshare.**

A warning message appears telling you that the item will no longer be available. Click OK.

Turning off automatic sharing

1 **In the Mac OS environment, open the PC Setup control panel.**

2 **Open the Sharing pop-up menu and choose the name of the volume you no longer want to share automatically.**

Automatically shared items are underlined in the Sharing pop-up menu.

Setting up your PC on a network

Your DOS-compatible card or computer supports most networking protocols, operating systems, and application programs that are compatible with the following network drivers: Novell's Open Data-Link Interface specification (ODI) or Microsoft's Network Driver Interface Specification (NDIS) version 2.0.

IMPORTANT A DOS-compatible card or computer with less than 8 MB of RAM available in the PC environment does not have sufficient memory to support all kinds of networking.

To set up networking, you need to acquire and install networking client software in the PC environment. For more information, see the Appendix, “Installing Network Client Software.”

Configuring the PC serial ports

Your DOS-compatible card or computer supports two serial ports, COM1 and COM2. You can map these ports to Macintosh serial ports (such as the printer or modem port) or to a text file for later processing. Or you can leave the ports unmapped.

- **To map a PC COM port, open the PC Setup control panel and choose a setting in the COM1 or COM2 pop-up menu.**

  Macintosh serial ports already in use appear dimmed in the menu.

IMPORTANT Mac OS programs cannot access a port that you’ve assigned to the PC environment. To use the port in the Mac OS, you must unmap the PC COM port and restart the PC.

Setting up a modem or other serial device

From the PC environment, you can use a modem or other serial device connected to the Macintosh serial port.

Because the Macintosh uses the RS-422 protocol, several RS-232 signals are not available through a Macintosh serial port:

- Carrier Detect (CD)
- Data Set Ready (DSR)
- Request to Send (RTS)
- Ring Indicator (RI)

You can set most communications applications to respond to the CARRIER string sent back by most modems rather than requiring Carrier Detect. For more information about using serial ports, see your DOS and Windows documentation.

Building a custom cable

The following chart lists the signals present on the Macintosh Mini DIN-8 connector, and the pins that carry these signals on PC-style DB-9 and DB-25 connectors. You may be able to use this information to build a custom cable to connect your PC-compatible serial device to a Macintosh serial port. Refer to the manual for the serial device you want to connect for the recommended serial connection.

Macintosh signal	Macintosh Mini DIN-8	DB-9	DB-25	RS-232 name
HSK0	1	4	20	DTR
HSK1	2	8	5, 8	CTS, DCD
TXD-	3	3	2	TXD
GND	4	5	7	GND
RXDA-	5	2	3	RXD
TXDA+	6	N/C	N/C	
GP1	7	N/C	N/C	
RXD+	8	5	7	GND

3 Working in the PC Environment

This chapter describes the software that you use to work in the PC environment, to switch between the Mac OS and PC environments, and to share data between the environments.

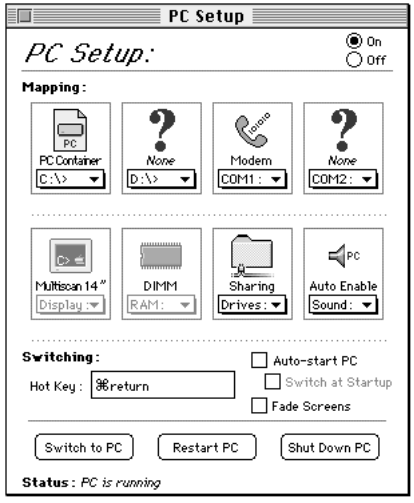
This chapter describes:

- switching between the Mac OS and PC environments
- turning the PC on and off
- using floppy disk drives and floppy disks
- using CD-ROM discs and drives
- using a mouse
- using keyboards
- copying and pasting information between Mac OS and Windows documents
- using shared folders and volumes
- using PC files in the Mac OS

Switching between the Mac OS and PC environments

You can use one environment—Mac OS or PC—at a time. You switch between the Mac OS and the PC environments using the PC Setup control panel. Follow these steps:

1. **Choose Control Panels from the Apple (🍎) menu.**
2. **Double-click the PC Setup icon to open the control panel.**



3. **Click Switch to PC to switch to the PC environment.**

   If you are using a single monitor to display both environments, you can set the screen to fade briefly before switching environments by clicking the checkbox next to Fade Screens.

4. **To switch back to the Mac OS, press ⌘-Return.**

Switching environments with a keyboard command

You can set a keyboard command, or hot key, to switch between the Mac OS and the PC environments. The default hot key is ⌘-Return.

Note: If you set a new hot key, it will work in both environments, and you can still use ⌘-Return to switch from the PC to the Mac OS. But ⌘-Return will not work to switch from the Mac OS to the PC.

To set a new hot key, follow these steps:

1. **In the Mac OS environment, open the PC Setup control panel.**
2. **Click the Hot Key text field.**
3. **Type the command you want to use to switch environments.**

The ⌘ key is automatically included; you type the additional characters you want. For example, you might type Option-P, setting the switch command to ⌘-Option-P.

Some character combinations cannot be used and will be ignored if you type them.

Turning the PC on and off

You can use the PC Setup control panel (in the Mac OS) to start, restart, shut down, or turn off the PC.

IMPORTANT Be sure to quit all open PC applications and exit Windows before shutting down the PC or Macintosh. Failing to do so will result in the loss of any unsaved data and might result in corruption of the drive container or partition.

To start the PC if it's shut down, click Start PC in the PC Setup control panel.

If the PC is already running, the button is labeled Restart PC.

To restart the PC, click Restart PC in the control panel.

To restart (“warm boot”) the PC in the PC environment, use one of the following keyboard commands:

- Control-Alt (Option)-[keypad] period (the decimal point key on the numeric keypad)
- Control-Alt-⌦ (the Del key, not the Delete key)

To reset (“cold boot”) the PC in the PC environment, use one of the following keyboard commands:

- ⌘-Control-Alt-[keypad] period (the decimal point key on the numeric keypad)
- ⌘-Control-Alt-⌦ (the Del key, not the Delete key)

To shut down the PC, click Shut Down PC in the PC Setup control panel.

This option turns off the PC until you click Start PC in the PC Setup control panel.

To turn off PC compatibility entirely, click Off at the top of the PC Setup control panel; then restart your computer.

If you turn off PC compatibility, you will not be able to switch to the PC environment.

To turn PC compatibility on, click On in the PC Setup control panel and restart the Macintosh.

Starting the PC automatically

You can set the PC to start automatically when you start your computer, and you can switch to the PC environment automatically after startup. To do this, you use the PC Setup control panel.

To have the PC start automatically when you turn on your Macintosh, click Auto-start PC.

To switch immediately to the PC environment whenever you turn on your Macintosh, click Switch at Startup.

IMPORTANT If you want to switch to the PC whenever you start up, make sure that the Shut Down Warning option is turned off in the Mac OS General Controls panel. If the warning is on, you will not be able to switch back to the Mac OS environment for a few minutes after switching to the PC.

Using floppy disk drives and floppy disks

Keep the following in mind when you use floppy disks:

- In the PC environment, the floppy disk drive is referred to as A.
- In the PC environment, you cannot use a Mac OS–format floppy disk. If you insert one, it will be ejected.
- To eject a floppy disk in the PC environment, press ⌘-E.
- To use an unlocked PC or Mac floppy disk, you must switch to the environment where you want to use the disk before inserting it. You can use a locked PC disk freely in both environments.
- In the PC environment, blank disks may only be formatted for the PC. In the Mac OS, you can format disks for either environment.
- Some blank disks are preformatted. If you insert a new, blank disk in the PC environment and it is ejected, it may have been preformatted in Mac OS format. To use the disk in the PC environment, you can switch to the Mac OS and format the disk for the PC. For instructions, see the documentation that came with your computer or Mac OS software upgrade kit.

Restarting the PC from a floppy disk

To restart (reboot) the PC using a bootable floppy disk, insert a floppy disk containing operating system software into the disk drive. Press Control-Alt-⌦ to restart the PC.

Using CD-ROM discs and drives

Keep the following in mind when using CD audio discs and CD-ROM discs and drives:

- In the PC environment, press ⌘-Y to eject a disc. If the disc cannot be ejected (because a file is in use or the disc is being shared), you will hear a beep.

- You can start an audio CD in either environment and continue to listen when you switch environments. (If you start up and switch to the PC while listening to an audio CD, there may be a delay of several seconds while the PC starts up.)
- If you have more than one CD-ROM drive, the PC environment can use only the one with the lowest SCSI ID number.

Using a mouse

The standard mouse or other pointing device for Macintosh computers has one button; most PC devices have two buttons that perform different functions. If you do not have a two-button pointing device, you can purchase one from your Apple-authorized dealer. Be sure to ask for an ADB (Apple Desktop Bus) device—devices for IBM-compatible computers do not work with Macintosh computers.

You may need to install and configure mouse software to set up the mouse to work like a PC mouse. For more information, see the documentation that came with your mouse.

You can also use keyboard commands to simulate the actions of the second button. If you are using a one-button mouse, you can control it as follows:

- The button on the mouse behaves like the left button on a two-button mouse.
- To simulate pressing the right mouse button, press the = (equal) key on the numeric keypad.
- To simulate pressing the left and right mouse buttons at the same time, press the mouse button and the = key simultaneously.

If the software for your two-button mouse does not automatically configure your mouse or does not include a “Windows Right Mouse Button” option, you can assign the = (equal) key to the right mouse button.

In Windows, you can assign the mouse buttons to different keys using the Mouse control panel.

Using keyboards

You can use all Apple keyboards. The Option key on an Apple keyboard is the same as the Alt key in the PC environment.

On the Apple Extended Keyboard II, use the following equivalents for keys on a PC keyboard. (These equivalents also apply to the Apple Adjustable Keyboard if the function keyboard isn't plugged in.)

PC key	Macintosh keyboard equivalent
alt	option
F1 through F9	⌘-1 through 9
F10	⌘-0
F11	⌘-(minus)
F12	⌘-(equals)
F13	⌘-[
F14	⌘-]
F15	⌘-\
Home	⌘-[keypad] 7
PageUp	⌘-[keypad] 9
End	⌘-[keypad] 1
PageDown	⌘-[keypad] 3
Insert	⌘-[keypad] 0
Del	⌘-[keypad] (period)
Backspace	delete

Copying and pasting information between environments

You can exchange certain kinds of information between the Mac OS and Windows environments using the Copy and Paste commands in the Edit menu in both environments. To do this, the PC Clipboard extension must be installed in the Mac OS and the WINCLIP utility must be installed in Windows.

The PC Clipboard translates the following information formats:

- Windows CF_TEXT to/from Mac OS TEXT
- Windows RTF to/from Mac OS RTF
- Windows DIB to/from Mac OS PICT

To determine the format of material in the Mac OS, you can paste the material into the Scrapbook. In Windows, the View menu in Clipbook Viewer lists the formats that information may be converted to.

Note: Copying and pasting between DOS and Mac OS is not supported. If you want to translate information between the DOS and Mac OS environments, you can exchange files via a translation program.

When transferring information between the Mac OS and Windows, keep the following in mind:

- If you have the PC Clipboard extension installed, the Mac OS and Windows share a clipboard. That means if you copy an item to the Mac OS Clipboard, switch to Windows, and then copy an item to the Windows Clipboard, the original Mac OS Clipboard contents will be deleted.

  To prevent this, you can remove the PC Clipboard extension from the Extensions folder (inside the System Folder in the Mac OS). Removing the extension turns off clipboard translation between Mac OS and Windows.

  Note: If you remove the PC Clipboard extension, you will see an alert message every time you switch from the PC to the Mac OS.
- If you are planning to transfer information from the Mac OS Clipboard to Windows, make sure that Windows is running before you switch environments.
- Sounds cannot be transferred on the Clipboard between the Mac OS and Windows.

- When you're in the PC environment, all Mac OS programs are put in the background and the PC Clipboard runs in the foreground. You can prevent this by removing the PC Clipboard extension from the Extensions folder (inside the System Folder in the Mac OS). Removing the extension turns off clipboard translation between the Mac OS and Windows.

  Note: If you remove the extension, you will see an alert message every time you switch from the PC to the Mac OS.

- If you have trouble pasting information between Windows and the Mac OS, try the following:
  - Assign more memory to the PC Clipboard utility and to the Mac OS application into which you are pasting information.
  - In the Macintosh Easy Open control panel, make sure the Automatic Document Translation option is turned on. To open this control panel, choose Control Panels from the Apple menu, and double-click the Macintosh Easy Open icon.
  - Save the document you're copying from in a different format. Then reopen the document and copy the material you want to move.
  - Use the Paste Special command that is available in some Windows applications. This command lets you specify the format of material you're pasting.
  - If you're pasting an image to the Win95 WordPad, try using the command Insert Object as Paintbrush Picture.
  - Images that are compressed in the Mac OS (such as Kodak Photo CD thumbnails) may display only in gray when you paste them into Windows. If this happens, try expanding the image before copying it.

Using shared folders and volumes

You can share Mac OS folders and volumes with the PC by assigning them drive letters. The MACSHARE DOS program (installed with the PC support software) makes this possible.

Note: PC applications and their files work more quickly in a drive container or on a hard disk than in a shared folder. The performance of Mac OS programs is not affected by placing them in shared folders.

IMPORTANT Information in the "resource fork" of a Mac OS file (such as an original icon) is lost when the file is copied in the PC environment, and this may damage the file. Many document files do not have resource forks and can be copied from the PC environment without problems. However, QuickTime files cannot be copied in this manner. To copy a QuickTime file, you must open it in the Mac OS using the MoviePlayer program and save it in "non-Apple computer format" before copying or using it in the PC environment.

Using PC files in the Mac OS

There are three ways to access PC files in the Mac OS:

- You can access PC files on a floppy disk. For more information, see "Using Floppy Disk Drives and Floppy Disks," earlier in this chapter.
- You can access PC files in a shared folder or volume. For information on setting up a shared area, see "Using Shared Volumes" in Chapter 2.
- You can access PC files in a PC drive container or a PC-formatted SCSI hard drive attached to your Macintosh.

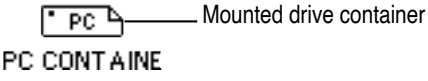
With Macintosh PC Exchange, you can see, move, and copy PC documents as icons in the Mac OS. However, you may not be able to open every kind of PC file in the Mac OS. If you can't open a file or if the file does not display properly, try one of the following:

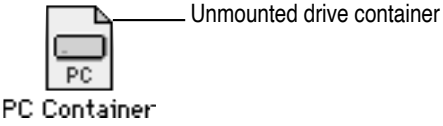
- Try opening the file using a different application program.
- Translate the document into a different file format using a file translation utility.
- If your PC program has an Export feature, use it to save the document in a different file format.
- Use a PC–Mac OS translation utility.

To gain access to files in a PC drive container from within the Mac OS, follow these steps:

1 In the Finder, double-click the drive container to open it.

The drive container appears as on the Mac OS desktop as either one of the following disk icons.





2 Double-click the container's disk icon.

The icon opens and you have access to the files inside it.

Note: If the PC is running, you can copy files from the drive container to other locations in the Mac OS, but you won't be able to add anything to the drive container or change any files in it. If you want to add or change files, you must first shut down the PC using the PC Setup control panel.

4 Troubleshooting in the PC Environment

Consult this chapter when you have questions about using the PC environment on your Macintosh.

If you have questions about using DOS, Windows, or PC application programs, see the manuals that came with your operating system software or programs.

WARNING If you have a problem with your PC compatibility hardware or software and nothing presented in this guide solves it, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the PC compatibility hardware yourself, any damage you may cause will not be covered by the limited warranty. Contact an Apple-authorized dealer or service provider for additional

Starting up

The Macintosh “hangs” or freezes during startup.

Restart the computer while holding down the Shift key to turn off extensions. After the computer starts up, restart the computer again.

The PC Setup icon has a red slash through it at startup.

You may have started the computer holding down the Shift key, which turns off extensions. Restart the computer without holding down the Shift key.

A RAM disk or RAM cache in the Mac OS may be using too much memory. Reduce the size of the RAM disk or RAM cache, and restart the computer.

The PC Setup software is not loading at startup. There may be a problem with the PC Setup Prefs file (in the Preferences folder within the System Folder). Remove the file and restart the Macintosh. Then use the PC Setup control panel to recreate your settings. If this doesn’t work, try reinstalling the PC software (see Chapter 1, “Installing the DOS Compatibility Software Update”).

The Macintosh software for PC compatibility doesn’t seem to be installed.

See Chapter 1, “Installing the DOS Compatibility Software Update,” for a list of the Macintosh software that is required. If any of these items is missing, try reinstalling the software, following the instructions in Chapter 1.

If you find the PC Setup control panel, open it. If drive C is not mapped to a drive container or hard disk drive, create a drive container (see “Creating a Drive Container” in the section “Configuring PC Drives” in Chapter 2).

The PC didn't start up.

Open the PC Setup control panel. Make sure the On button is selected at the top of the control panel. If it is, click Start PC at the bottom of the control panel. If the On button is not selected, click it; then restart your Macintosh. Open the PC Setup control panel again and click Start PC.

If the On button is selected and you have restarted the Macintosh, but the Switch PC, Start PC, and Shut Down PC buttons are not available, there may be a problem with your DOS-compatible card or computer. Consult your Apple-authorized service provider.

There may be a problem with the RAM installed on your card. Open the PC Setup control panel and check the RAM portion of the control panel. If it says No RAM, there is a problem with your RAM. Consult your Apple-authorized service provider.

DOS begins to start up but then the screen freezes. The cursor blinks, but you cannot type anything.

Press ⌘-Control-Alt-⌦ to restart the PC. When you see the message "Starting MS-DOS" or "Starting Windows 95," press and hold the F5 key to bypass your CONFIG.SYS and AUTOEXEC.BAT files.

After the PC has started up, check the files, change any incorrect lines (such as the EMM386 line), and then restart the PC.

In Windows 95, you can also hold down the F8 key to step through the files line by line. Usually the PC freezes immediately after a problematic line.

Switching to and from the PC

There is a delay when switching between environments.

There is a delay when you switch to the PC immediately after starting it or when you use the ⌘-Control-Alt-⌦ command to perform a hard restart. The PC is performing some system configuration tasks.

When switching would interfere with a Mac OS system task, there is a slight delay until the task is completed.

There also may be a delay while a large amount of Clipboard information is transferred.

If you are switching to the PC immediately after starting up the computer, make sure the Shut Down Warning is turned off in the General Controls panel in the Mac OS. If it is on, you may not be able to switch back to the Mac OS for several minutes after switching to the PC.

When I switch to the Mac OS from the PC environment, a message appears: "PC Clipboard requires additional system services in order to function. Please ensure that the PC Compatibility Card is successfully installed."

Macintosh Easy Open software may be turned off or may not be installed. Restart the computer, open the Macintosh Easy Open control panel, and make sure the software is turned on. If you can't find the control panel, reinstall it from the *PC Compatibility Software* disk.

In the PC environment, I see the message "Non-system disk or disk error. Replace and strike any key when ready."

The PC environment can't find operating system software such as DOS or Windows.

A nonbootable floppy disk may be in the floppy disk drive. Press ⌘-E to eject the disk; then try starting the PC again.

Make sure drive C is mapped to a drive container or hard disk drive that contains DOS or Windows software.

If you can't find a drive container, the PC software may not be installed. See Chapter 1, "Installing the DOS Compatibility Software Update."

Display problems

When I try to switch to the PC environment, my screen is blank or garbled.

Open the PC Setup control panel and check the Display portion of the control panel.

If you see the message “Not Supported,” your monitor may not be compatible. Refer to the technical specifications in the manual that came with your computer or card to see if your monitor is supported.

If you see the message “Unknown,” PC Setup does not recognize your monitor type, but you may be able to configure your video software to identify the monitor.

If you see the message “No Display,” your monitor may not be connected properly. Make sure your monitor is connected according to the instructions in the manual that came with your computer or card.

The PC Setup Prefs file may be damaged. Locate the file (in the Preferences folder inside the System Folder) and throw it away; then restart the Macintosh. When the computer starts up, open the PC Setup control panel and verify the settings.

I tried configuring my display and now it won’t work properly.

In Windows 95, if you choose a configuration that won’t display properly, follow these steps to correct the problem:

1. Switch to the Mac OS by typing ⌘-Return.
2. In the PC Setup control panel, click Restart PC.
3. Switch to the PC by clicking Switch to PC.
4. When you see the message “Starting Windows 95,” press F8 and select Enter Safe Mode.
5. When Windows 95 starts up, click Start, choose Settings, and click Control Panel.
6. Double-click the Display icon.
7. Click the Settings tab, and select a correct monitor setting in the list that appears (such as 640x480). Then restart Windows.

My monitor flashes oddly when I switch environments.

When you are using a single monitor for both environments, there is a flash when you switch from one environment to the other. If you prefer not to see the flash, turn on the Fade Screens option in the PC Setup control panel.

When I start up certain software in the PC environment, my Apple monitor shows a jumbled or rolling image.

Some application programs that write directly to the hardware (especially games) may not work with some monitors. Contact the software company and ask if the software has a switch to force it to make BIOS calls.

Problems with files and disks

I want to assign a drive container to the C or D drive, but I can't find the drive container in the dialog box.

The drive container may be assigned to another drive letter. Check the C: and D: pop-up menus.

I want my drive container to have more than one partition.

Create a new drive container following the instructions in "Changing the Size of a Drive Container" in Chapter 2. Initialize the drive container in DOS using the FDISK and FORMAT commands.

I can't share all the folders I want.

Make sure that you have sufficient drive letters assigned in your CONFIG.SYS file's LASTDRIVE statement. The PC reserves the letters A–E; other letters are available to be assigned to shared folders or volumes.

Novell Netware may reassign drive letters even if you have assigned them to shared folders. Try reserving additional drive letters and reassigning your shared folders.

I inserted a floppy disk in the PC environment and it was ejected.

The disk may have been formatted for the Mac OS. Switch to the Mac OS and try inserting the disk again.

I inserted a PC-formatted disk in the Mac OS and an initialization message appeared.

Macintosh PC Exchange may not be installed in the Control Panels folder. If you don't find it, you can reinstall it using your system software CD-ROM disc.

The disk may be damaged. Try inserting another disk. If that works, test the original disk in the PC environment using a disk repair utility.

I switched to the Mac OS, and I don't see the floppy disk I was using.

The floppy disk may not have been locked. To use an unlocked PC-formatted floppy disk in the Mac OS, you must switch to the Mac OS before inserting the disk.

I can access a floppy disk from one environment but not the other.

Only a locked floppy disk can be accessed in both environments simultaneously. Eject, lock, and reinsert the disk, or eject the disk, switch to the environment you want to use it in, and reinsert the disk. The disk must be formatted for the PC if you want to use it in the PC environment.

Shared folders don't get updated in Windows 95.

Sometimes you need to refresh shared folders manually in Windows 95. Click My Computer, click View; then click Refresh once or twice.

In some Microsoft application programs, a shared drive icon looks like a floppy disk or CD icon.

The shared drive is still usable.

Problems with information transfer

Copying and pasting between environments isn't working.

Only certain kinds of information can be copied and pasted. See "Copying and Pasting Information Between Environments" in Chapter 3 for more information.

Copying and pasting between the Mac OS and Windows works only if the PC Clipboard extension is installed in the Extensions folder inside the System Folder (in the Mac OS) and WINCLIP is installed in the Windows environment.

Check the Control Panels folder in your System Folder to make sure that the Macintosh Easy Open control panel is installed. Also, make sure the Automatic Document Translation option in the control panel is turned on. To open the Macintosh Easy Open control panel, choose Control Panels from the Apple menu, and double-click the Macintosh Easy Open icon.

Windows must be running before you begin the copy-and-paste operation.

You cannot copy and paste between the Mac OS and DOS.

I can't copy files from the Mac OS to a drive container currently in use by the PC.

You cannot copy files while the PC is running. Shut down the PC and try copying the files again.

I can't connect to a network in the PC environment.

Make sure that your networking software is properly installed and configured. See the Appendix, "Installing Network Client Software."

Make sure the network is up and running (check the Chooser and check with your network administrator).

My PC communications software doesn't work.

The Macintosh and the PC use slightly different serial port protocols, and some commands do not work. See "Setting Up a Modem or Other Serial Device" in Chapter 2.

Configuration problems

I can't assign a COM port to a Macintosh serial port.

COM ports cannot be assigned to Macintosh serial ports that are in use by an application or network software.

If you assign a COM port to a Macintosh serial port, the serial port cannot be used by the Mac OS until you unassign the COM port and restart your PC.

Sound problems

Windows 95 crashes unexpectedly.

If Sound Blaster is not configured properly, Windows 95 may crash when any application attempts to play a 16-bit sound. To configure Sound Blaster, follow these steps:

1. Click Start, choose Settings, choose Control Panel, and then double-click the System icon to open the System Properties control panel.
2. Click the Device Manager tab.
3. Double-click "Sound, video, and game controllers" in the list.
4. Double-click "Creative Labs Sound Blaster 16 or AWE-32" in the list.
5. Click the Resources tab in the dialog box that appears.
6. Click "Use automatic settings" to deselect the option.
7. Choose "Basic Configuration 7" from the "Settings based on" pop-up menu.
8. Click OK.
9. Click OK in the System Properties dialog box.
10. Close the Control Panel window.

I'm installing a program that is asking me to enter information about how Sound Blaster is configured.

Some programs (particularly games) may ask you to enter the following during installation:

- Base I/O Address: 220
- MPU-401 MIDI Port: 330
- IRQ: 5
- Low DMA Channel: 1
- High DMA Channel: 1 (same as Low DMA Channel)

I can't install Sound Blaster software.

Before you can install Sound Blaster software, you may need to make a temporary change to your AUTOEXEC.BAT file in order to free enough memory for the install utility. Open the AUTOEXEC.BAT file in a text editor and edit the line containing the word "SMARTDRV" as shown:

```
REM C:\DOS\SMARTDRV.EXE
```

Restart the PC by pressing Control-Alt-⌦, and try the installation again.

Be sure to restore the "SMARTDRV" line in the AUTOEXEC.BAT file to its original state after Sound Blaster installation is successful.

I can't hear PC sounds.

PC sound may be turned off in the PC Setup control panel, or the appropriate sound input options may not be selected in the Mac OS. Consult the documentation that came with your computer or system software upgrade kit.

If you can't hear sound from a CD, make sure that the internal CD audio cables are installed according to the installation instructions in the manual that came with your DOS Compatibility Card.

The PC environment can play sound only from the CD-ROM drive with the lowest SCSI ID number. If you're using another CD-ROM drive, you won't hear sound when you switch to the PC environment.

If you are using DOS or Windows, increase the speaker volume with the Sound Blaster Mixerset application. To run the Mixerset application from DOS, change to the SB16 directory, type `mixerset`, and press Enter.

Check that the AUTOEXEC.BAT file contains the following lines:

```
SET BLASTER=A220 I5 D1 H1 T6
SET SOUND=C:\SB16
C:\SB16\MIXERSET /P /Q
```

CD sound went away when I switched environments.

If you are playing an audio CD when you start the PC and switch environments, there is a delay in the sound while the PC completes some system configuration tasks.

Check that the CONFIG.SYS file contains this line:

```
DEVICEHIGH=C:\APPLE\CDROM.SYS/D:CDDRVR
```

Check that the AUTOEXEC.BAT file contains this line:

For Windows 95:

```
LOADHIGH C:\WINDOWS\COMMAND\MSCDEX.EXE /D:CDDRVR /L:E
```

For Windows:

```
LOADHIGH C:\DOS\MSCDEX.EXE /D:CDDRVR /L:E
```

I'm using Windows or Windows for Workgroups, and I can't play audio CDs.

Reinstall the MCI CD Audio driver from your original Windows installation disks. To install this driver, open the Control Panel icon in the Main program group. Double-click the Drivers icon, and click the Add button in the window that appears. Select "[MCI CD Audio]" from the scroll list and click OK. Insert the specific Windows installation disk if necessary.

Printing problems

Printing doesn't work.

Make sure that you've selected the correct preferences in PC Print Spooler (in the Extensions folder inside the System Folder). If your printer does not support PostScript, choose Epson.

Make sure that you have chosen appropriate printer drivers in your DOS applications and your Windows environment. If you have a PostScript Level 1 (black-and-white) printer, you must choose a PostScript Level 1 printer driver in Windows—a driver for a Level 2 printer will not work.

Make sure a printer is selected in the Macintosh Chooser.

If you're using Windows 95, make sure that bidirectional printing and the "Check port before printing" options are turned off. If you're printing to a PostScript printer, make sure that the "Send Ctrl+D" feature is turned off.

For more information, see "Setting Printer Options" in Chapter 2.

When I try to print from the DOS prompt, I get an error message.

If you're using PostScript emulation, open PC Print Spooler in the Extensions folder (inside the System Folder). Choose Preferences from the File menu. Make sure the checkbox labeled "Print non-PostScript as Epson" has an X in it. Switch to DOS and try printing again (or move the spool file from the Spooler Rejected folder to the Spooler folder).

When I print a document in the PC environment, the top and bottom get clipped.

If you're using Epson emulation, open PC Print Spooler in the Extensions folder, choose Preferences from the File menu, and click "Gaps between pages." In the PC environment, configure your applications to print to a 60-line page.

You cannot print to legal-size paper from the PC environment using the PC Print Spooler. You can print only to the default paper size in the Mac OS Page Setup dialog box (US Letter in the U.S.).

When I print a document from a DOS application, the fonts don't look right.

Try choosing different fonts. If you're using Epson fonts instead of bitmap fonts, use monospace fonts for best formatting results.

If you're using Epson emulation, you may have chosen Faster Printing in the Preferences dialog box of the PC Print Spooler, which prints the whole document using a single font. Choose Better Quality and try printing again.

You may have selected a proportional space font as your default font in the PC Print Spooler. If you select a proportional space font, the formatting of your files may change. Try selecting a monospace font such as Courier or Monaco or using the graphical fonts available in your DOS application.

Other problems

I'm running applications in both environments and they seem sluggish.

Significant drive access in one environment (including file sharing) can cause a slowdown in the other.

The PC environment is frozen, and pressing Control-Alt-⌦ doesn't reset the system.

Try restarting by pressing ⌘-Control-Alt-[keypad] period (the decimal point on the numeric keypad) or ⌘-Control-Alt-⌦. If you can, switch to the Mac OS and click Restart PC in the PC Setup control panel. If these options don't work, reset the Macintosh using the Reset key or keyboard command.

I can't configure my mouse.

You don't need to configure some mouse devices.

If you have a two-button ADB mouse or trackball, you may be able to use the mouse software to map the = (equal) key on the numeric keypad to the right-mouse button.

Appendix
Installing Network Client Software

Your DOS-compatible card or computer supports network drivers that conform to Novell's Open Data-Link Interface (ODI) and Microsoft's Network Driver Interface Specification (NDIS) v.2.0. This appendix describes how to install and configure a variety of network protocol software and client software.

Use this appendix as a supplement to the documentation that came with your network software. If your configuration still doesn't work after following the instructions in this appendix, contact the manufacturer of your network software.

This appendix contains instructions for installing and setting up the following network software combinations.

ODI driver with the following protocols

- NetBEUI and IPX/SPX in Windows 95
- TCP/IP in Windows 95
- NetBEUI in Windows for Workgroups
- IPX/SPX in Windows for Workgroups
- Microsoft's TCP/IP-32 IP in Windows for Workgroups
- Trumpet WinSock in Windows for Workgroups (packet driver)
- Spry's Air Series TCP/IP in Windows for Workgroups
- AppleShare for Windows in Windows for Workgroups
- Novell's LAN WorkPlace for DOS TCP/IP software

NDIS 2.0 driver with the following protocols

- NetBEUI and IPX/SPX in Windows 95
- Microsoft's TCP/IP and IPX/SPX in Windows 95
- NetBEUI and IPX/SPX in Windows for Workgroups
- Microsoft's TCP/IP in Windows for Workgroups
- Client software for an OS/2 LAN Server in DOS, Windows, or Windows for Workgroups
- Banyan Vines in DOS

Either the ODI or NDIS 2.0 driver with the following protocol

- NetManage's Chameleon TCP/IP in Windows for Workgroups

If you are installing a protocol for use with an ODI driver, See "Installing Protocols for Use With Open Data-Link Interface (ODI)," next. If you are installing a protocol for use with an NDIS 2.0 driver, see "Installing Protocols for Use With Network Driver Interface Specification (NDIS) 2.0," later in this appendix.

Installing protocols for use with Open Data-Link Interface (ODI)

Before you install a protocol for use with ODI, follow the steps in the next section to install the NetWare client software. Then refer to the instructions later in this section that describe installing and setting up the network protocol you want to use.

Installing NetWare client software

Install NetWare client software before installing any ODI-compatible protocol.

Note: If you are installing Windows for Workgroups, the Novell NetWare client, and TCP/IP support, it is easiest if you install the NetWare client first, Windows for Workgroups second, and TCP/IP support third.

You need to know the Ethernet frame type in use on your network segment. Your network administrator can give you this information.

1. **Start the NetWare Client Install program and follow the instructions on screen for steps 1–3.**
2. **Select step 4.**

   A list of network interface controller (NIC) drivers appears.
3. **Select Other Drivers and press Enter.**
4. **Insert the disk containing the NetWare client software and select PC Compatibility Ethernet Adapter.**
5. **Follow the instructions to select the proper frame type and to finish the installation.**

Make sure your configuration files include the following:

CONFIG.SYS

```
FILES=40
STACKS=9,256
LASTDRIVE=Z
DEVICE=C:\Apple\CDROM.SYS /D:CDDRVR
```

AUTOEXEC.BAT

```
@CALL C:\NWCLIENT\STARTNET
PROMPT $P$G
PATH C:\WINDOWS;C:\DOS
PATH=C:\NWCLIENT\;%PATH%
```

STARTNET.BAT

```
@ECHO OFF
C:
CD \NWCLIENT
SET NWLANGUAGE=ENGLISH
LSL
MACODI.COM
IPXODI
VLM
CD \
```

NET.CFG

```
LINK DRIVER MACODI
   FRAME ETHERNET_802.2
```

Using ODI drivers with NDIS compatible protocols

If you will be using ODI drivers with NDIS compatible protocols, you need a translator file. Microsoft's NDIS to ODI translator, ODIHLP.EXE, is automatically installed with Windows for Workgroups 3.11 if you indicate you will be using ODI drivers.

If you will be using both Novell NetWare and Windows for Workgroups 3.11, you should use ODIHLP.EXE instead of Novell's equivalent file, ODINSUP.COM (included with NetWare).

If you use ODINSUP.COM, you must change the NET.CFG file to specify an interrupt. Add the statement `INT 6` to the Link Driver section of the NET.CFG file.

Conserving memory

The line `CALL C:\NWCLIENT\STARTNET.BAT` in the AUTOEXEC.BAT file loads four programs into DOS memory—LSL.COM, MACODI.COM, IPXODI.COM, and VLM.EXE (in this order). To conserve memory in the lower DOS region, you may wish to edit the STARTNET.BAT file to load those four programs with the LOADHIGH (LH) command. See your DOS documentation for more details on manually optimizing DOS memory.

Installing NetBEUI and IPX/SPX in Windows 95

This section describes how to install the NetBEUI and IPX/SPX protocols for use with an ODI driver in Windows 95. If you are using NDIS 2.0, refer to this topic in "Installing Protocols for Use With NDIS 2.0" later in this appendix.

1. **Install the NetWare client software.**

   For more information, see the subsection "Installing NetWare Client Software" earlier in this appendix.

2. **In Windows 95, click Start, choose Settings, and then choose Control Panel from the menu that appears.**

3. **Double-click the Network Icon in the Control Panel.**

4. **Click Add in the Network Configuration dialog box.**

5. **Select Adapter Component from the Network Component list, and then click Add.**

6 **In the Manufacturers list, select Detected Net Drivers.**

7 **In the Network Adapters list, select Existing ODI Driver, and then click OK.**

The Network Configuration dialog box appears.

8 **To share files or your printer with other users on the network, click the File and Print Sharing button.**

9 **Select the checkboxes in the dialog box to enable file or printer sharing, and then click OK.**

If file or printer sharing has been selected, "File and printer sharing for Microsoft Networks" will appear in the Network Configuration dialog box.

10 **Select the Identification tab at the top of the network configuration box.**

11 **Type in a unique name, work group name, and any description you would like for the computer.**

The computer must have a unique name to access the network. The work group name is usually "WORKGROUP."

12 **Click OK.**

13 **Insert the Windows 95 installation CD-ROM or disk when prompted to do so.**

14 **When the System Settings Change dialog box prompts you to restart your computer, click No.**

15 **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

Installing TCP/IP in Windows 95

This section describes how to install the TCP/IP protocol for use with an ODI driver in Windows 95. If you are using NDIS 2.0, refer to this topic in "Installing Protocols for Use With NDIS 2.0" later in this appendix.

1 **Install the NetWare client software.**

For more information, see the subsection "Installing NetWare Client Software" earlier in this appendix.

2 **In Windows 95, click the Start button, choose Settings, and then choose Control Panel from the menu that appears.**

3 **Double-click the Network Icon in the Control Panel.**

4 **Click Add in the Network Configuration dialog box.**

5 **Select Adapter Component from the Network Component list, and then click Add.**

6 **In the Manufacturers list, select Detected Net Drivers.**

7 **In the Network Adapters list, select Existing ODI Driver, and then click OK.**

The Network Configuration dialog box appears.

8 **Click Add.**

9 **Double-click the Protocol icon.**

10 **In the Manufacturers area, select Microsoft. In the Network Protocols area, select TCP/IP.**

11 **To share files or your printer with other users on the network, click the File and Print Sharing button.**

12 **Select the checkboxes in the dialog box to enable file or printer sharing, and then click OK.**

If file or printer sharing has been selected, "File and printer sharing for Microsoft Networks" will appear in the Network Configuration dialog box.

13 **Select the Identification tab at the top of the network configuration box.**

14 **Type in a unique name, work group name, and any description you would like for the computer.**

The computer must have a unique name to access the network. The work group name is usually "WORKGROUP."

15 **Click OK.**

16 **Insert the Windows 95 installation CD-ROM or disk when prompted to do so.**

17 **When the System Settings Change dialog box prompts you to restart your computer, click No.**

18 **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

Installing NetBEUI in Windows for Workgroups

This section describes the settings necessary to install the NetBEUI protocol for use with an ODI driver in Windows for Workgroups. If you are using NDIS 2.0, refer to this topic in "Installing Protocols for Use With NDIS 2.0" later in this appendix.

1 **Install the NetWare client software.**

For more information, see "Installing NetWare Client Software" earlier in this appendix.

2 **In Windows, open the Network Setup control panel, click Drivers, and click Add Adapter. Then select NetBEUI.**

3 **Make sure MACODI.COM is in the \NWCLIENT directory.**

4 **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

5 **Make sure your configuration files contain the following:**

NET.CFG

```
LINK DRIVER MACODI
   FRAME ETHERNET_802.3
   FRAME ETHERNET_II
   FRAME ETHERNET_802.2
   FRAME ETHERNET_SNAP
  PROTOCOL NETBEUI  F0 ETHERNET_802.2
NETWARE DOS REQUESTER
   FIRST NETWORK DRIVER = F
```

AUTOEXEC.BAT (must begin with the following lines in this order)

```
C:\WINDOWS\NET START
@CALL C:\NWCLIENT\STARTNET
C:\WINDOWS\ODIHLP.EXE
```

PROTOCOL.INI

```
[NETWORK.SETUP]
   VERSION=0X3110
   NETCARD=MS$ODIMAC,1,MS$ODIMAC,4
   TRANSPORT=MS$NETBEUI,NETBEUI
   LANA0=MS$ODIMAC,1,MS$NETBEUI
[LINK DRIVER MACODI]
   DATA=FRAME ETHERNET_SNAP
   DATA=FRAME ETHERNET_802.2
   DATA=FRAME ETHERNET_II
   DATA=FRAME ETHERNET_802.3
[NET.CFG]
   PATH=C:\NWCLIENT\NET.CFG
[MS$ODIMAC]
   PROTOCOLDOT2=F0
[NETBEUI]
   BINDINGS=MACODI
   LANABASE=0
   SESSIONS=10
   NCBS=12
```

Installing IPX/SPX in Windows for Workgroups

This section describes the settings necessary to install the IPX/SPX protocol for use with an ODI driver in Windows for Workgroups.

Installing ODI drivers in Windows for Workgroups adds two commands to the AUTOEXEC.BAT file:

- `NET START` initializes the Windows network functions
- `ODIHLP.EXE` calls Microsoft's ODI to NDIS translation file

IMPORTANT The Windows for Workgroups Network Browser requires more than 540K of conventional memory. You should maximize conventional memory by removing unnecessary device drivers and TSRs and by loading the remaining device drivers and TSRs into high memory, if possible.

1. **Install the NetWare client software.**

   For more information, see "Installing NetWare Client Software" earlier in this appendix.

2. **In the Network Setup control panel, click Drivers, click Add Adapter, and select "IPXODI Support Driver (Ethernet)."**

3. **Select "IPX/SPX Compatible Transport With NetBIOS."**

4. **Select your frame type.**

5. **Set the default protocol.**

6. **If you installed NetWare, you're asked you if you want to replace the Novell NetWare drivers. Answer no.**

7. **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

8. **Verify that your configuration files contain the following information.**

   After following the above instructions, your configuration files should contain the information shown below, assuming a frame type of ETHERNET_802.2 and that NetBEUI is not installed.

   NET.CFG

```
LINK DRIVER MACODI
   FRAME ETHERNET_802.2
   FRAME ETHERNET_802.3
   FRAME ETHERNET_SNAP
   FRAME ETHERNET_II
   PROTOCOL IPX EO ETHERNET_802.2
```

AUTOEXEC.BAT

```
C:\WINDOWS\NET START
@CALL C:\NWCLIENT\STARTNET
C:\WINDOWS\ODIHLP.EXE
@ECHO OFF
LH C:\DOS\SMARTDRV.EXE /X
PROMPT $P$G
PATH C:\WINDOWS;C:\DOS
PATH=C:\NWCLIENT\;%PATH%
LH C:\APPLE\APPLEPC
LH C:\APPLE\MACSHARE
LH C:\DOS\MSCDEX /D:CDDRVR /L:E
SET TMP=C:\TEMP
```

PROTOCOL.INI

```
[NETWORK.SETUP]
   VERSION=0X3110
   NETCARD=MS$ODIMAC,1,MS$ODIMAC,4
   TRANSPORT=MS$NWLINKNB,NWLINK
   LANA0=MS$ODIMAC,1,MS$NWLINKNB

[NET.CFG]
   PATH=C:\NWCLIENT\NET.CFG

[MS$ODIMAC]
   [LINK DRIVER MACODI]
   DATA=FRAME ETHERNET_SNAP
   DATA=FRAME ETHERNET_802.2
   DATA=FRAME ETHERNET_II
   DATA=FRAME ETHERNET_802.3
   DATA=LINK DRIVER MACODI

[NWLINK]
   BINDINGS=MACODI
   FRAME=ETHERNET_802.2
```

Installing Microsoft's TCP/IP-32 IP protocol stack in Windows for Workgroups

Follow these steps to set up Microsoft's TCP/IP-32 IP protocol stack for use with an ODI driver in Windows for Workgroups.

1. **Install the NetWare client software.**

   For more information, see "Installing NetWare Client Software" earlier in this appendix.

2. **Install the protocol stack following the instructions that came with it.**

3. **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

4. **After running SETNET, make sure the NET.CFG and PROTOCOL.INI files contain the sections shown below.**

   The following entries assume that IPX/SPX support is loaded.

   NET.CFG

```
LINK DRIVER MACODI
   FRAME ETHERNET_802.2
   FRAME ETHERNET_802.3
   FRAME ETHERNET_II
   FRAME ETHERNET_SNAP
   PROTOCOL IPX E0 ETHERNET_802.2
   PROTOCOL IP 800 ETHERNET_II
   PROTOCOL ARP 806 ETHERNET_II
   PROTOCOL RARP 8035 ETHERNET_II

LINK SUPPORT
   MAX BOARDS 4
   BUFFERS 4 1500
   MEMPOOL 4095
```

PROTOCOL.INI

```
[NETWORK.SETUP]
VERSION=0X3110
NETCARD=MS$ODIMAC,1,MS$ODIMAC,4
TRANSPORT=MS$NWLINKNB,NWLINK
TRANSPORT=TCPIP-32N,MSTCP32
LANA0=MS$ODIMAC,1,MS$NWLINKNB
LANA1=MS$ODIMAC,1,TCPIP-32N

[NET.CFG]
PATH=C:\NWCLIENT\NET.CFG

[MS$ODIMAC]
[LINK DRIVER MACODI]
DATA=FRAME ETHERNET_SNAP
DATA=FRAME ETHERNET_802.2
DATA=FRAME ETHERNET_II
DATA=FRAME ETHERNET_802.3
DATA=LINK DRIVER MACODI

[NWLINK]
BINDINGS=MACODI
FRAME=ETHERNET_802.2

[MSTCP32]
BINDINGS=MACODI
LANABASE=1
```

Installing Trumpet WinSock in Windows for Workgroups

This section describes how to set up the Trumpet WinSock protocol for use with an ODI driver in Windows for Workgroups.

1 **Install the NetWare client software.**

For more information, see “Installing NetWare Client Software” earlier in this appendix.

2 **Gather all the files necessary for installing Trumpet WinSock, including:**

- TCPMAN.EXE
- TRUMPWSK.INI
- WINSOCK.DLL
- WINPKT.COM
- ODIPKT.COM

3 **Make sure that all the Trumpet WinSock files are in the directory C:\TRUMPET.**

4 **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

5 **After running SETNET, make sure your NET.CFG file and the batch file you use to call the networking software contain the following entries:**

NET.CFG

```
LINK DRIVER MACODI
   FRAME ETHERNET_802.2
   FRAME ETHERNET_802.3
   FRAME ETHERNET_SNAP
   FRAME ETHERNET_II
   PROTOCOL IPX E0 ETHERNET_802.2
   PROTOCOL IP 800 ETHERNET_II
   PROTOCOL ARP 806 ETHERNET_II
   PROTOCOL RARP 8035 ETHERNET_II

LINK SUPPORT
   BUFFERS 8 1600
   MEMPOOL 4095
```

AUTOEXEC.BAT

```
C:\NWCLIENT\LSL.COM
C:\NWCLIENT\MACODI.COM
C:\NWCLIENT\IPXODI.COM
C:\TRUMPET\ODIPKT.COM  3 107
C:\TRUMPET\WINPKT.COM 107
```

You may also include the AUTOEXEC.BAT lines in STARTNET.BAT. If you do so, be sure to include the following pointer to STARTNET.BAT. from your AUTOEXEC.BAT file:

```
@CALL [PATH]\STARTNET
```

Note: LSL.COM is the link support layer driver supplied by Novell client software. MACODI.COM is the network interface driver supplied by Apple. IPXODI.COM is the IPX/SPX protocol stack layer supplied by Novell client software. ODIPKT.COM is the ODI packet driver supplied by InterCon software. The first number represents the frame type, as listed in the NET.CFG file. Ethernet_II is the last of four frame types (the first is number 0). The second number is the "line number" and should always be set to 107 for Ethernet. WINPKT.COM is the Windows virtual packet driver. It takes as an argument the line number for the packet driver.

Installing Spry Air Series TCP/IP in Windows for Workgroups

This section describes how to install the Spry Air Series TCP/IP protocol for use with an ODI driver in Windows for Workgroups.

IMPORTANT If you have not already installed TCP/IP client software such as Microsoft TCP/IP-32 or Trumpet Winsock, install it before you install the Air Series software.

If you are using a VGA driver, and Air Series software version 30, you need to make the following change:

1. **Make sure the Air Series Setup disk is *not* read-only.**
2. **Place the disk in drive A.**
3. **Type the following at the DOS prompt:**

```
A: <return>
MOVE SETUP.BMP SETUP.OLD <return>
COPY C:\WINDOWS\RIVETS.BMP A:SETUP.BMP <return>
```

To install Air Series from Windows:

1 **Install the NetWare client software.**

For more information, see "Installing NetWare Client Software" earlier in this appendix.

2 **Run the Air Series installation program.**

During installation, select the option to install "Air Series applications (using existing TCP/IP transport)." If you are not using this option, make sure that MACODI.COM is in your \AIR\BIN directory and that your AUTOEXEC.BAT file contains the following:

```
C:\AIR\BIN\MACODI
```

3 **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

- If you are are on a NetWare local area network and you're using the Novell VLM redirector, these lines should appear in this order:

```
REM CALL C:\NWCLIENT\STARTNET.BAT
C:\AIR\BIN\TCPIP
C:\NWCLIENT\VLM
```

- If you are using NETx, these lines should appear in this order:

```
C:\NWCLIENT\VLM
C:\AIR\BIN\TCPIP
```

Installing AppleShare for Windows in Windows for Workgroups

This section describes how to install and set up the AppleShare for Windows protocol for use with an ODI driver in Windows for Workgroups.

1 **Install the NetWare client software.**

For more information, see "Installing NetWare Client Software" earlier in this appendix.

2 **Install AppleShare for Windows according to the instructions that came with it.**

3 **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

4 **After running SETNET, make sure your configuration files contain the following sections.**

These sections assume no other network software is installed.

NET.CFG (with ODI support installed)

```
LINK SUPPORT
     BUFFERS 10 628
     MEMPOOL 16K

PROTOCOL APPLETALK
     DEFAULT MACODI #1
     AARP MACODI #1  H(0001) L(6) B(090007FFFFFF)

LINK DRIVER MACODI
     INT #1 10
     PORT #1 300 0
     FRAME ETHERNET_SNAP
     FRAME ETHERNET_802.3
     PROTOCOL IPX 0 ETHERNET_802.3
     PROTOCOL APPLETALK 80007809B ETHERNET_SNAP
     PROTOCOL AARP 80F3 ETHERNET_SNAP
```

ATDRIVER.BAT (with ODI support installed)

```
C:\APPLE\A_SHARE\LSL.COM
C:\APPLE\A_SHARE\MACODI.COM
C:\APPLE\A_SHARE\ODI.EXE
```

If you install a NetWare client after the AppleShare client, make sure that IPXODI and VLM are loaded after ATDRIVER.BAT in the NET.CFG file.

Installing Novell's LAN WorkPlace for DOS TCP/IP software

This section describes how to set up the LAN WorkPlace for DOS TCP/IP protocol for use with an ODI driver.

Follow these steps to install LAN WorkPlace for DOS.

1 **Install the NetWare client software.**

For more information, see "Installing NetWare Client Software" earlier in this appendix.

2 **Run the installer for LAN WorkPlace for DOS and follow the instructions on the screen.**

Let it modify your files.

3 **Make sure your NET.CFG file contains the following:**

NET.CFG

```
LINK DRIVER MACODI
   FRAME ETHERNET_802.2
   FRAME ETHERNET_II
   PROTOCOL IPX E0 ETHERNET_802.2
   PROTOCOL IP 800 ETHERNET_II
   PROTOCOL ARP 806 ETHERNET_II

LINK SUPPORT
   BUFFERS 8 1500
   MEMPOOL 4096

PROTOCOL TCPIP
   PATH SCRIPT       C:\NET\SCRIPT
   PATH PROFILE      C:\NET\PROFILE
   PATH LWP_CFG      C:\NET\HSTACC
   PATH TCP_CFG      C:\NET\TCP
   IP_ROUTER         X.X.X.X
   IP_NETMASK        X.X.X.X
   IP_ADDRESS        X.X.X.X
```

Your network administrator can provide the correct numbers to enter for IP_ROUTER, IP_NETMASK, and IP_ADDRESS.

LAN WorkPlace for DOS adds the following line to the AUTOEXEC.BAT file:

```
CALL C:\LANWP.BAT
```

This command asks if you want to load the TCP/IP transport file, then loads it if you answer Yes. The transport file is is called TCPIP.EXE and is located in the directory C:\NET\BIN.

Edit the \NET\BIN\LANWP.BAT file so that the following line appears after `lsl.com` and before `tcpip.exe`:

```
c:\apple\macodi.com
```

Installing protocols for use with Network Driver Interface Specification (NDIS) 2.0

Installing NetBEUI and IPX/SPX in Windows 95

This section describes how to set up the NetBEUI and IPX/SPX protocols for use with an NDIS driver in Windows 95. If you are using ODI, refer to this topic in "Installing Protocols for Use With Open Data-Link Interface (ODI)" earlier in this appendix.

1. **In Windows 95, select Start, and then select Settings.**
2. **Select Control Panel; then double-click the Network icon to open it.**
3. **Select Add; then select Adapter.**
4. **Select Have Disk.**
5. **Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive; then click OK.**
6. **You see the message "PC Card Network Driver (NDIS2)." Click OK.**

The following network items will be automatically installed:

- Client for Microsoft Networks
- Client for NetWare Networks
- PC Card Network Driver (NDIS2)
- IPX/SPX-compatible Protocol
- NetBEUI

7 **Perform any custom setting that you need (for example, enable file sharing).**

8 **Select Identification. Fill in the boxes labeled "Computer name," "Workgroup," and "Computer Description." Then click OK.**

9 **Insert the Windows 95 CD or floppy disks as instructed.**

Windows 95 will install all the necessary network components.

10 **Refer to the section "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

11 **After running SETNET, make sure your PROTOCOL.INI file contains the following:**

PROTOCOL.INI

```
[NDISHLP$]
   DRIVERNAME=NDISHLP$
   BINDINGS=MACNDIS$

[PROTMAN$]
   DRIVERNAME=PROTMAN$
   PRIORITY=NDISHLP$

[DATA]
   VERSION=V4.00.950
   NETCARDS=MACNDIS$,MACNDIS

[NETBEUI$]
   DRIVERNAME=NETBEUI$
   LANABASE=0
   SESSIONS=10
   NCBS=12
   BINDINGS=MACNDIS$

[NWLINK$]
   DRIVERNAME=NWLINK$
   FRAME_TYPE=4
   CACHESIZE=0
   BINDINGS=MACNDIS$

[MACNDIS$]
   DRIVERNAME=MACNDIS$
   PROTOCOLDOT2="F0,E0,FF"
```

12 **Shut down Windows 95.**

13 **Switch to the Mac OS by typing ⌘-Return.**

14 **Click Restart PC in the PC Setup control panel.**

Installing Microsoft TCP/IP-32 protocol stack in Windows 95

This section describes how to set up the Microsoft TCP/IP-32 protocol for use with an NDIS driver in Windows 95.

This section assumes that you are installing only the Microsoft TCP/IP protocol. If you want to install additional protocols, you must modify the PROTOCOL.INI file accordingly. The Apple Network Setup Utility can add this information for you.

1 **Start Windows 95.**

2 **Select Start, and then select Settings.**

3 **Select Control Panel; then double-click the Network icon to open it.**

4 **Select Add; then select Adapter.**

5 **Select Have Disk.**

6 **Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive; then click OK.**

7 **You will see the message "PC Card Network Driver (NDIS2)." Click OK.**

The following network items will be automatically installed:

- Client for Microsoft Networks
- Client for NetWare Networks
- PC Card Network Driver (NDIS 2.0)
- IPX/SPX-compatible Protocol
- NetBEUI

8 **Perform any custom setting that you need (for example, enable file sharing).**

If you want to intall the TCP/IP protocol only, then remove the other protocols after you have installed the TCP/IP protocol stack first.

9 **Cick Add, then Protocol and click Add. Under Manufacturers, select Microsoft. Under the Network Protocols, double-click on TCP/IP.**

10 **Enter all the nessarry information to configure the TCP/IP stack. Double-click on TCP/IP protocol under the "PC Card Network Driver (NDIS2)" and enter the necessary info.**

11 **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

12 **After running SETNET, make sure your PROTOCOL.INI file contains the following (assuming TCP/IP is the only loaded protocol):**

PROTOCOL.INI

```
[ndishlp$]
   DriverName=ndishlp$
   Bindings=MacNDIS$
[protman$]
   DriverName=protman$
   priority=ndishlp$
[data]
   version=v4.00.950
   netcards=MacNDIS$,MacNDIS
[MacNDIS$]
   DriverName=MacNDIS$
   ProtocolDIX="800,806,8035"
```

13 **Shut down Windows 95.**

14 **Switch to the Mac OS by typing ⌘-Return.**

15 **Click Restart PC in the PC Setup control panel.**

Installing NetBEUI and IPX/SPX in Windows for Workgroups

This section describes how to set up the NetBEUI and IPX/SPX protocols for use with an NDIS driver in Windows for Workgroups. If you are using ODI, refer to this topic in "Installing Protocols for Use With ODI" earlier in this appendix.

If you want to install additional protocols, you must modify the PROTOCOL.INI file accordingly. The Apple Network Setup Utility can add this information for you.

1. **In Windows, open the Network group and select Network Setup.**
2. **Select Networks, and then select "Install Microsoft Windows Network"; then click OK.**
3. **Click Drivers; then click Add Adapters.**
4. **Select "Unlisted or Updated Network Adapter."**
5. **Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive; then click OK.**
6. **You'll see the message "PC Card Network Driver (NDIS2)." Click OK.**
7. **Click Close; then click OK.**
8. **Fill in the boxes labeled "User name," "Workgroup," and "Computer Name." Then click OK.**
9. **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**
10. **After running SETNET, make sure your PROTOCOL.INI file contains the following lines:**

```
[NETWORK.SETUP]
   VERSION=0X3110
   NETCARD=MACNDIS,1,MACNDIS,1
   TRANSPORT=MS$NDISHLP,MS$NDISHLP
   TRANSPORT=MS$NETBEUI,NETBEUI
   LANA0=MACNDIS,1,MS$NETBEUI
   LANA1=MACNDIS,1,MS$NDISHLP

[PROTMAN]
   DRIVERNAME=PROTMAN$
   PRIORITY=MS$NDISHLP

[MACNDIS]
   DRIVERNAME=MACNDIS$
   PROTOCOLDOT2="F0,E0,FF"

[MS$NDISHLP]
   DRIVERNAME=NDISHLP$
   BINDINGS=MACNDIS
```

11 Exit Windows.

12 Switch to the Mac OS by typing ⌘-Return.

13 Click Restart PC in the PC Setup control panel.

Installing Microsoft's TCP/IP in Windows for Workgroups

This section describes how to set up the Microsoft TCP/IP protocol for use with an NDIS driver in Windows for Workgroups. If you are using ODI, refer to this topic in "Installing Protocols for Use With Open Data-Link Interface (ODI)" earlier in this appendix.

1 In Windows, open the Network group and double-click the Network Setup icon.

2 Select Networks, select Install Microsoft Windows Network, and then click OK.

3 Click Drivers; then click Add Adapters.

4 Select Unlisted or Updated Network Adapter and then click OK.

5 Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive and then click OK.

You see the message, "PC Card Network Driver (NDIS2)."

6 Click OK.

7 Click Add Protocol

8 Double-click Unlisted or Updated Protocol.

9 Enter the path to where the MS TCP/IP stack is located and click OK.

10 Click Close, and then click OK.

11 Fill in the User name, Workgroup, and Computer Name text boxes. Then click OK.

12 Follow the instructions on screen to complete the installation.

13 Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.

14 **After running SETNET, make sure the PROTOCOL.INI file contains the following lines:**

PROTOCOL.INI

```
[network.setup]
version=0x3110
netcard=MacNDIS,1,MACNDIS,1
transport=ms$ndishlp,MS$NDISHLP
transport=tcpip-32r,MSTCP32
lana0=MacNDIS,1,ms$ndishlp
lana1=MacNDIS,1,tcpip-32r

[protman]
DriverName=PROTMAN$
PRIORITY=MS$NDISHLP

[MACNDIS]
DriverName=MacNDIS$
ProtocolDIX="800,806,8035"

[MS$NDISHLP]
DriverName=ndishlp$
BINDINGS=MACNDIS

[MSTCP32]
BINDINGS=MACNDIS
LANABASE=0
```

Using an OS/2 LAN Server with Windows for Workgroups

To set up Windows for Workgroups to run on an OS/2 LAN Server, follow these steps:

1 **Make sure you have an account on the OS/2 LAN server, and that NETBUI is loaded and functioning.**

If you are not sure, ask your system administrator.

2 **Open the Main group, double-click the Control Panel icon, and then double-click the Network icon.**

3 **In the Workgroup text box, assign your computer to the same workgroup that contains the OS/2 LAN Server.**

If you wish, add your user name on the LAN Server in the Default Logon Name text box.

4 **Restart the PC.**

Next time you start Windows, you can log on using the user name assigned to you in the OS/2 LAN Server group.

Installing client software for an OS/2 LAN server in DOS or Windows

Follow these steps to install the OS/2 LAN Server protocol for use with an NDIS driver in DOS or Windows.

IMPORTANT Do not use these instructions for installing the OS/2 client in Windows for Workgroups. Doing so may create problems with your network. For more information, see the previous subsection, "Using an OS/2 LAN Server With Windows for Workgroups."

1 **Create three installation floppies from the OS/2 LAN Server CD.**

2 **Insert floppy 1 in the disk drive. Type the following:**

```
A:\INSTALL <enter>
```

3 **Verify the pathname for the installation and press Enter.**

The default path is C:\NET.

4 **In the list of network cards that appears, select "Network card not shown in list below"; then press Enter.**

5 **Eject the disk and insert the floppy disk containing the NDIS2 driver. Press Enter twice.**

6 **Insert Disk 1 again; then press Enter.**

7 **Enter a machine name, user name, and domain name.**

8 **Follow the instructions on screen to finish the installation**

9 **Restart the PC.**

10 **Make sure your files contain the following lines:**

PROTOCOL.INI

```
[network.setup]
version=0x3100
netcard=MacNDIS,1,MACNDIS
transport=ibm$netbeui,IBM$NETBEUI
lana0=MacNDIS,1,ibm$netbeui

[protman]
DriverName=PROTMAN$
PRIORITY=ibm$NETBEUI

[MACNDIS]
DriverName=MacNDIS$
ProtocolDot2=F0

[IBM$NETBEUI]
DriverName=netbeui$
SESSIONS=20
NCBS=20
BINDINGS=MACNDIS
LANABASE=0
```

CONFIG.SYS (the lines must be in this order)

```
DEVICE=C:\NET\PROTMAN.DOS /I:C:\NET
DEVICE=C:\NET\MACNDIS.DOS
DEVICE=C:\NET\DLSHELP.SYS
```

AUTOEXEC.BAT (the lines must be at the end of the file)

```
SHARE
C:\NET\NET START
```

NETWORK.INI

```
[NETWORK]
COMPUTERNAME=<name you specified>
LANROOT=C:\NET
AUTOSTART=FULL
GUICONFIG=0,0,1
USERNAME=<name you specified>
DOMAIN=<name you specified>
LSLOGON=YES
RECONNECT=YES
PASSWORDCACHING=YES

[PASSWORD LISTS]
username=C:\NET\username.PWL
```

Note: You can use the NETGUI command for Graphical DOS Network management work. You can also use Windows if you have installed the necessary Windows files.

If you have problems with OS/2 networking, please contact IBM.

Installing Banyan Vines in DOS

This section describes the settings you must make when using Banyan Vines with an NDIS driver in DOS. Refer to the documentation that came with Windows for Workgroups for other installation instructions.

1. **Install the Banyan Vines client software.**

2. **Make sure your configuration files contain the following:**

CONFIG.SYS

```
REM *** BANYAN ***
DEVICE=C:\BANYAN\PROTMAN.DOS /I:C:\BANYAN
DEVICE=C:\BANYAN\MACNDIS.DOS
```

PROTOCOL.INI (in the directory where the Banyan software is installed)

```
[VINES_NIF]
DRIVERNAME=NDISBAN$
BINDINGS=MACNDIS

[MACNDIS]
DRIVERNAME=MACNDIS$
PROTOCOLDIX=BAD
```

Installing NetManage Chameleon TCP/IP software in Windows for Workgroups

This section describes the steps necessary to install the NetManage Chameleon TCP/IP protocol for use with the either an ODI or NDIS driver in Windows for Workgroups.

If you are using an ODI-compatible protocol, be sure to install the Novel NetWare client software first. See "Installing NetWare Client Software" earlier in this appendix.

1. **Run the Chameleon/NFS installer and follow the instructions in the NetManage manual and on screen.**

2. **Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

3. **After running SETNET, make sure your files include the following entries:**

   AUTOEXEC.BAT

   ```
   C:\NETMANAG\NMODI
   ```

   NET.CFG

   ```
   LINK DRIVER MACODI
      FRAME ETHERNET_802.2
      FRAME ETHERNET_II

      PROTOCOL IP 800 ETHERNET_II
      PROTOCOL ARP 806 ETHERNET_II
      PROTOCOL RARP 8035 ETHERNET_II
   ```

Using a dial-up service

If you are using a dial-up service, you may need to edit the configuration file to conform to your service's setup options. Click the Custom icon in Windows, open the appropriate .CFG file, and edit the file.

Running the Network Protocol Setup (SETNET) utility

A PC-compatible Macintosh allows you to connect to more than one network at a time, one in the PC environment and one in the Mac OS environment. The Network Protocol Setup (SETNET) utility helps configure your PC networking setup files (such as NET.CFG and PROTOCOL.INI) to distinguish between information sent to the network selected in the Mac OS environment and information sent to the network in the PC environment.

Before running SETNET, you must have installed network driver and protocol software according to the instuctions earlier in this appendix.

1 **In Windows 95, click Start, and choose Run from the menu that appears.**
In Windows, choose Run from the File menu.

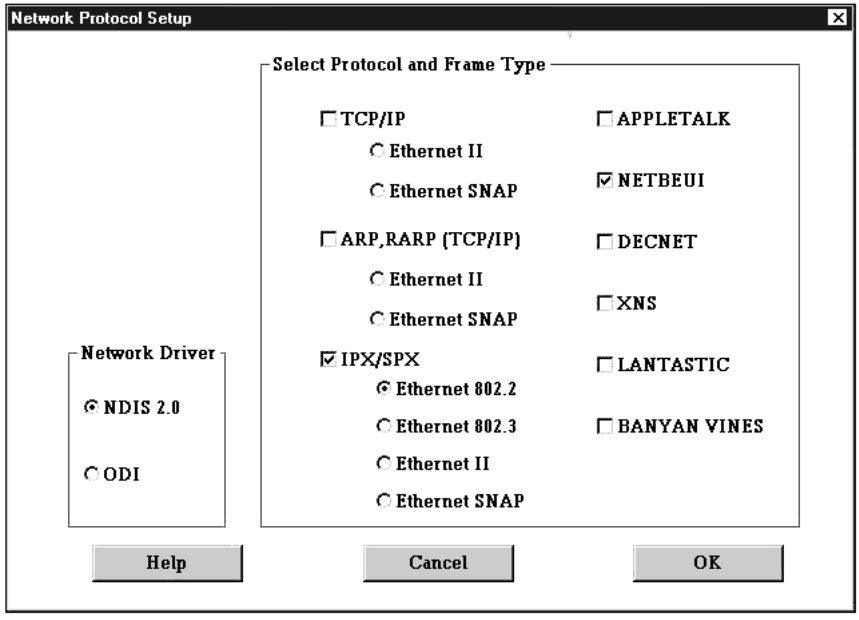
A dialog box appears.

2 **Insert the *APPLE_PC* floppy disk.**

3 **Type the following and then press Return:**

```
A:\SETNET.EXE
```

The Network Protocol Setup dialog box appears.



You should not need to select an option in the Network Driver area. The SETNET utility automatically detects the network driver you installed.

4 **Select one or more network protocols that you installed by clicking checkboxes in the "Select Protocol and Frame Type" area.**

You can select more than one protocol if you have installed more than one. If you are only using one protocol, be sure to turn on its checkbox and leave the other checkboxes turned off.

5 **If you are using TCP/IP, ARP, RARP (TCP/IP), or IPX/SPX, select the appropriate frame type for each selected protocol by clicking radio buttons in the Select Protocol and Frame Type area.**

6 **Click OK.**

7 **Shut down or exit Windows.**

8 **Switch to the Mac OS by typing ⌘-Return.**

9 **Shut down the PC by clicking Shut Down PC in the PC Setup control panel.**

10 **Shut down the Macintosh, wait ten seconds, and start up the Macintosh again.**

You need to shut down the Macintosh and start it up again to make sure that the network software is installed properly.

IMPORTANT If you are using ODI with Windows 95, you may need to manually add the following two lines to your `PROTOCOL.INI` file before running the SETNET utility:

```
[NET.CFG]
PATH=C:\NWCLIENT\NET.CFG
```